Investigation of the Effects of Orography on the Cold-Season Hydrometeorology in California

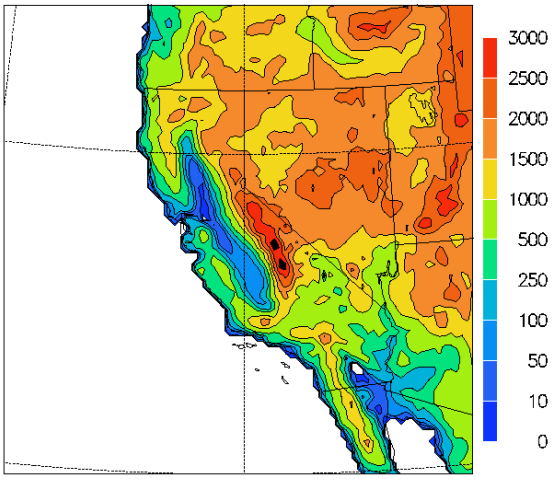

Figure 1. The model terrain represented at an 18 km horizontal resolution within the domain. The black color indicates that the model terrain is above the 3000 m level.

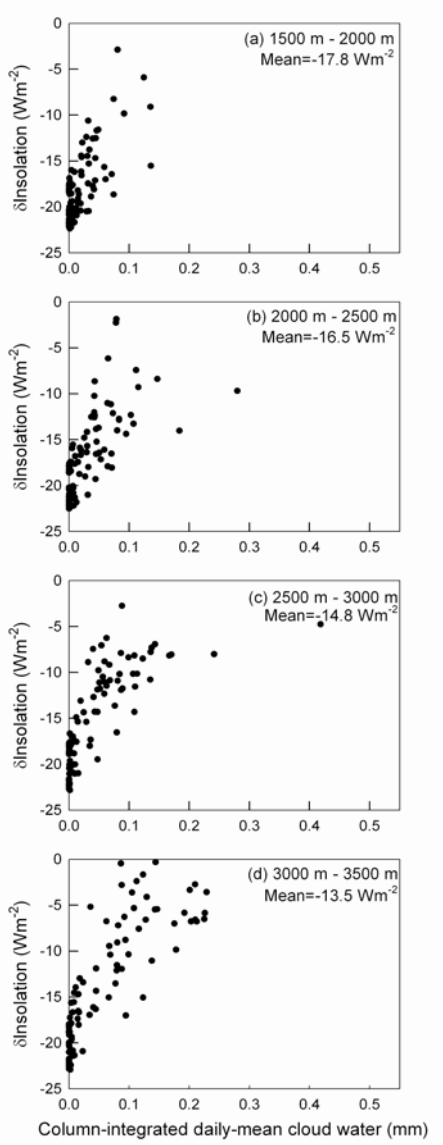

Figure 2. The direct aerosol radiative forcing on daily-mean surface insolation and the ICW in the 4 elevation bands above 1500 m.

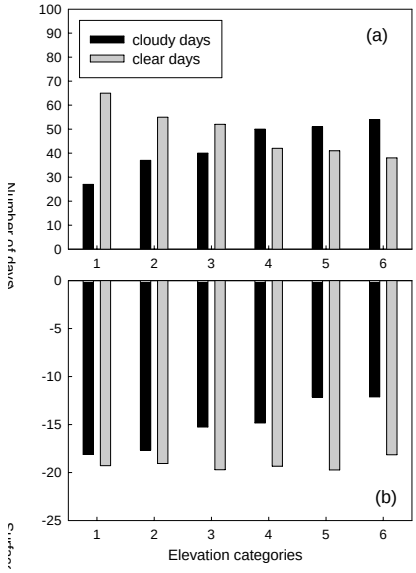

Figure 3. The (a) number of cloudy and clear days and (b) direct aerosol radiative forcing on surface insolation averaged over cloudy (black) and clear (gray) days in each elevation band. The elevation category (EC) 1 covers from the sea level to 1 km. The ECs 2-6 cover the elevation ranges: $1000 + 500 \times (\mathrm{EC} - 1) < z < 1000 + 500 \times \mathrm{EC}$.

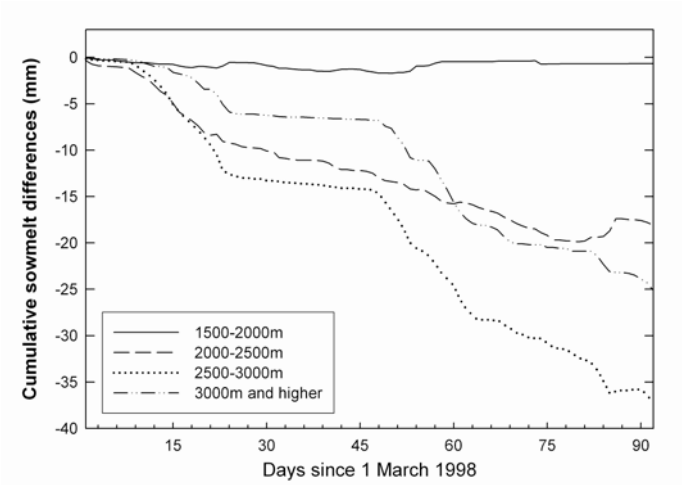

Figure 4. The direct aerosol radiative forcing on the cumulative snowmelt within the elevation bands 3-6 (above 1500 m).

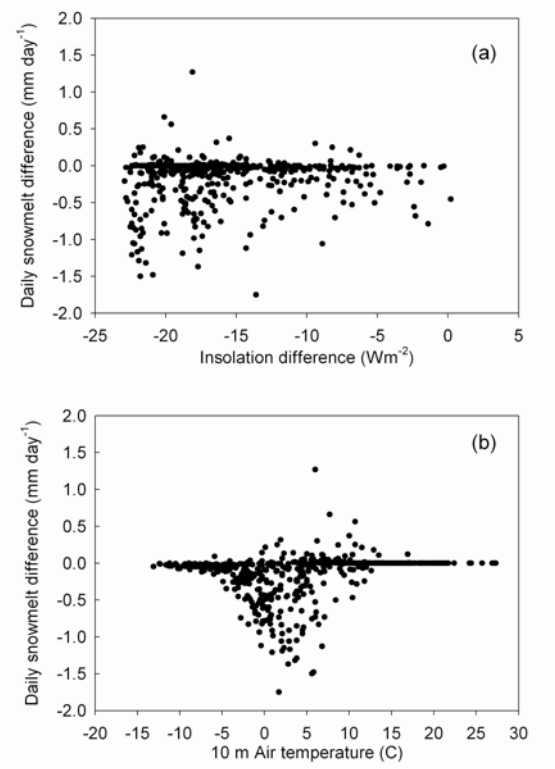

Figure 5. The relationship between (a) the direct aerosol radiative forcings on snowmelt and surface insolation, and (b) low-level temperatures and the direct aerosol radiative forcing on snowmelt, in all elevation ranges.

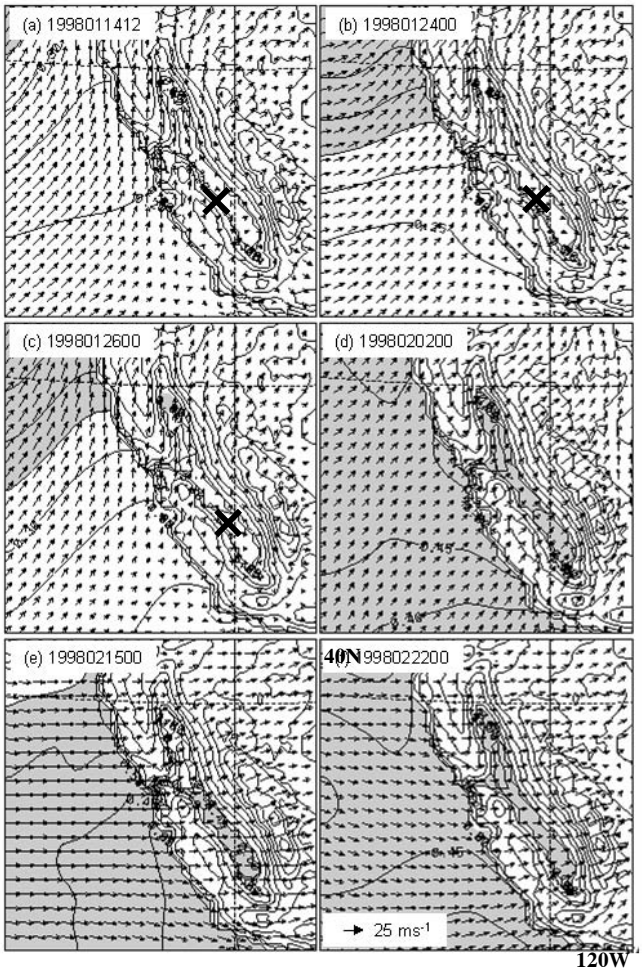

Figure 6. The low-level winds averaged over the lowest two sigma layers, about 150 m thick, and the values of *Fr* in the low-*Fr* (a-c) and high-*Fr* (d-e) cases selected for investigation. The contour intervals are 0.05. Shading indicates the region where *Fr* is larger than 0.35. The cross in (a-c) indicates the locations at which a stagnation point appears.

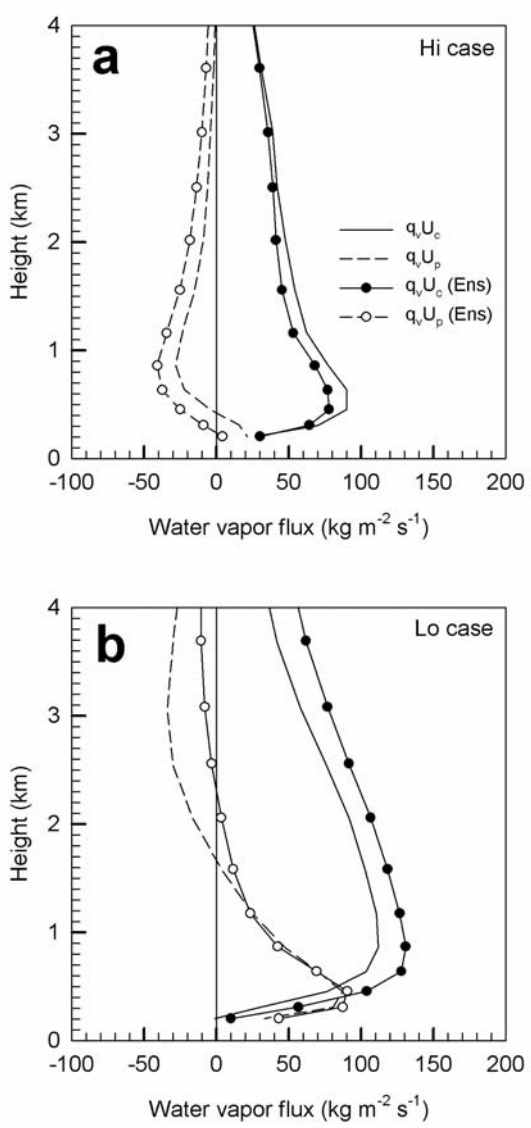

Figure 7. The vertical profiles of *Qc* (solid line) and *Qp* (dashed line) in the (a) high-*Fr* and (b) low-*Fr* cases averaged along the line B1-B2 in Fig. 2. The lines with circles are averages over the entire high- and low-*Fr* cases identified in Table 1.